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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/671,794

09/29/2003

Toshiaki Okuno

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EXAMINER

SINGH, DALZID E

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/671,794

Applicant(s)

OKUNO, TOSHIKI

Examiner

Dalzid Singh

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-13 is/are allowed.
- 6) ☒ Claim(s) 14-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: claim 1 recites "a wavelength of α_a ". In the specification on paragraph [0034], this symbol represents loss and not wavelength. Appropriate correction is required.

Claim 13 is objected to because of the following informalities: claim 13 recites "a wavelength of α_a ". In the specification on paragraph [0034], this symbol represents loss and not wavelength. Appropriate correction is required.

Specification

2. The disclosure is objected to because of the following informalities: on paragraph [0039], it appears that " P_u " should have been " P_n " as expressed by equation (2). Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 24-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 24-27 recites, "wavelength property that has a tendency..." It is unclear how the wavelength has a tendency. Is there means provided so that the wavelength change state? Based on this, claims 24-27 are rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 14, 19 and 24-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimomura et al (US Patent No. 6,400,498).

Regarding claims 14 and 19, Shimomura et al disclose an optical multiplexer and demultiplexer for combining/separating a plurality of component signals each having a different center wavelength to constitute a signal lightwave, the optical multiplexer having an insertion loss that increases with increasing center wavelength of the component signals (see col. 30, lines 46-51).

Regarding claim 24 (as far as understood in view of the 112 2nd paragraph), Shimomura et al disclose optical multiplexer for combining a plurality of component

signals each having a different center wavelength to constitute a signal lightwave, the optical multiplexer being incorporated into an optical transmission system; the optical transmission system comprising an optical transmission line; the optical multiplexer having an insertion (see col. 30, lines 46-51; col. 1, lines 45-51, it is inherent there exist multiplexer to multiplex wavelength signals).

Regarding claim 25, (as far as understood in view of the 112 2nd paragraph), Shimomura et al disclose an optical demultiplexer for separating a plurality of component signals each having a different center wavelength from a signal lightwave, the optical demultiplexer being incorporated into an optical transmission system; the optical transmission system comprising an optical transmission line; the optical demultiplexer having an insertion loss (see col. 30, lines 46-51 and Fig. 2).

Regarding claim 26, (as far as understood in view of the 112 2nd paragraph), Shimomura et al disclose an optical multiplexer for combining a plurality of component signals each having a different center wavelength to constitute a signal lightwave, the optical multiplexer being incorporated into an optical transmission system; the optical transmission system comprising an optical demultiplexer and at least one optical receiver; the optical multiplexer having an insertion loss (see col. 30, lines 46-51).

Regarding claim 27, (as far as understood in view of the 112 2nd paragraph), Shimomura et al an optical demultiplexer for separating a plurality of component signals each having a different center wavelength from a signal lightwave, the optical demultiplexer being incorporated into an optical transmission system; the optical

transmission system comprising an optical multiplexer and at least one optical receiver;
the optical demultiplexer having an insertion loss (see col. 30, lines 46-51).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimomura et al (US Patent No. 6,400,498) in view of Waarts et al (US Patent No. 6,275,632).

Regarding claims 15 and 20, Shimomura et al disclose transmission of multiple wavelength as WDM signal and differ from the claimed invention in that Shimomura et al do not disclose that the component signals have a center-wavelength spacing of at least 10 nm. Waarts et al disclose WDM system which has wavelength spacing of 10 nm (see col. 14, lines 66-67 to col. 15 lines 1-4). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide spacing of 10 nm as taught by Waarts et al to the WDM system of Shimomura et al in order to provide desirable distance to avoid crosstalk between wavelengths.

9. Claims 16-18 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimomura et al (US Patent No. 6,400,498).

Regarding claims 16-18 and 21-23, Shimomura et al disclose transmission of plurality of wavelengths and differ from the claimed invention in that Shimomura et al do not disclose that the wavelength has a center wavelength of at most 1,520 nm and any other of the component signals has a center wavelength of at least 1,570 nm or has a center wavelength of at most 1,410 nm and any other of the component signals has a center wavelength of at least 1,570 nm or has a center wavelength of at most 1,310 nm and any other of the component signals has a center wavelength of at least 1,590 nm. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide wavelength at such particular center.

Allowable Subject Matter

10. Claims 1-13 are allowed (upon correction of the claim objections as indicated above).

The following is a statement of reasons for the indication of allowable subject matter:

Claim 1 is allowed because the prior art of record does not teach or suggest an optical transmission system for transmitting a signal lightwave comprising a plurality of component signals each having a different wavelength, the optical transmission system comprising:

- (a) at least one optical transmitter;
- (b) at least one optical receiver; (c) an optical fiber transmission line that:
 - (c1) is installed between the at least one optical transmitter and the at least one optical receiver; and
 - (c2) has a length of at most 150 km; and
- (d) an optical component that: (d1) is installed between the at least one optical transmitter and the at least one optical receiver; and
 - (d2) gives a loss to the signal lightwave; the component signals including a component signal having a wavelength of α_a and a component signal having a wavelength of λ_b ; the optical transmission system being designed such that:
 - (e) the total transmission loss in the optical fiber transmission line is smaller at a wavelength of λ_b than at a wavelength of λ_a ;
 - (f) the insertion loss of the optical component is larger at a wavelength of λ_b than at a wavelength of λ_a ; and
 - (g) the difference in power between the component signal having a wavelength of λ_a arriving at the at least one optical receiver and the component signal having a wavelength of λ_b arriving at the at least one optical receiver is smaller than the difference in the total transmission loss in the optical fiber transmission line between the wavelengths λ_a and λ_b .

Claim 13 is allowed because the prior art of record does not teach or suggest an optical transmission system for transmitting a signal lightwave comprising a plurality of

component signals each having a different wavelength, the optical transmission system comprising:

- (a) at least one optical transmitter;
- (b) at least one optical receiver;
- (c) an optical fiber transmission line that is installed between the at least one optical transmitter and the at least one optical receiver; and
- (d) an optical component that: (d1) is installed between the at least one optical transmitter and the at least one optical receiver; and
(d2) gives a loss to the signal lightwave;
the component signals including a component signal having a wavelength of λ_a and a component signal having a wavelength of λ_b ;
the optical transmission system being designed such that:
 - (e) the total transmission loss in the optical fiber transmission line is smaller at a wavelength of λ_b than at a wavelength of λ_a ;
 - (f) the insertion loss of the optical component is larger at a wavelength of λ_b than at a wavelength of λ_a ; and
 - (g) the difference in power between the component signal having a wavelength of λ_a arriving at the at least one optical receiver and the component signal having a wavelength of λ_b arriving at the at least one optical receiver is smaller than the difference in the total transmission loss in the optical fiber transmission line between

the wavelengths λ_a and λ_b .

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Goto et al (US Pub. No. 2003/0076578) is cited to show optical transmitting system.

Hirano et al (US Pub. No. 2002/0168160) is cited to show optical transmission line, and optical fiber and dispersion compensating module employed in the same.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DS
August 30, 2006

David Singh